New Species of *Stenospermation* and *Xanthosoma* (Araceae) from Bajo Calima, Valle Department, Colombia

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Abstract. Eight new species of *Stenospermation* Schott and *Xanthosoma* Schott (Araceae) from Bajo Calima, Colombia, are described as new: *Stenospermation ellipticum* Croat & D. C. Bay, *S. escobariae* Croat & D. C. Bay, *S. flavum* Croat & D. C. Bay, *S. glaucophyllum* Croat & D. C. Bay, *S. monsalvae* Croat & D. C. Bay, *S. velutinum* Croat & D. C. Bay, *Xanthosoma guttatum* Croat & D. C. Bay, and *X. hebetatum* Croat & D. C. Bay.

Resumen. Ocho nuevas especies de *Stenospermation* Schott y *Xanthosoma* Schott (Araceae) de Bajo Calima, Colombia se describe como nueva: *Stenospermation ellipticum* Croat & D. C. Bay, *S. escobariae* Croat & D. C. Bay, *S. flavum* Croat & D. C. Bay, *S. glaucophyllum* Croat & D. C. Bay, *S. monsalvae* Croat & D. C. Bay, *S. velutinum* Croat & D. C. Bay, *Xanthosoma guttatum* Croat & D. C. Bay y *X. hebetatum* Croat & D. C. Bay.

Key words: Araceae, Colombia, IUCN Red List, *Stenospermation*, *Xanthosoma*.

This manuscript treats six new species of *Stenospermation* Schott (Araceae) and two new species of *Xanthosoma* Schott (Araceae) from Bajo Calima, Valle Department, Colombia. The aim of this manuscript is to publish these new species in preparation for a more thorough treatment in an entire Flora of the Bajo Calima Region. The Bajo Calima region, covering roughly 80,000 ha. of lowland tropical rainforest, is located on the Pacific Andean slopes in central Colombia and is known to be one of the centers of diversity for Araceae (Bay, 1996).

The genus *Stenospermation*, with 43 known species (including those proposed here), ranges from Guatemala to the Guianas, Brazil, and Bolivia. It is primarily Andean in distribution with most species occurring in Colombia and Ecuador. The genus is disjunct with many fewer species in eastern South America. Most species occur at middle elevations, and thus it is interesting to see so many species (a total of 14 in the Bajo Calima region) found in the area of Bajo Calima, which is near sea level. *Stenospermation* is clearly the most poorly known genus in the family, with probably as many as four fifths of the total species remaining undescribed.

Xanthosoma is more widespread than *Stenospermation*, ranging from Mexico and the West Indies to Argentina and occurring over a wide elevational and ecological range. The genus has 60 published species with an additional eight to 10 more known unpublished species in Ecuador alone. Still, while there are undoubtedly other new species to be described, it is unlikely that the genus will end up with more than 100 species.

1. Stenospermation ellipticum Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., on Carretera Hanz, less than 100 m, 1 Mar. 1990, *T. B. Croat 71062* (holotype, MO-3780456; isotypes, CUVC, US).

Planta epiphytica, raro terrestris; internodia 5–15 mm longa, 1.5–3 cm diam., plerumque basibus petiolorum obtecta; cataphylla decidua; petiolus 16.5–49 cm longus, teres, anguste sulcatus, prope basim striatus, vaginatus usque ad medium, vagina atrovirenti maculata; lamina elliptica, late rotundata, apice abrupte acuminata, 23.5–35 cm longa,

8.3–17 cm lata, nitida; inflorescentia 1; pedunculus 21–34 cm longus, in sicco 2–3 mm diam., cernuus; spatha viridis; spadix sessilis, 5.5–6.5 cm longus, flavus; stigma rotundum, 0.3–0.5 mm diam.

Epiphytic, rarely terrestrial; stem appressed-climbing; *internodes* short, often obscured by petiole bases, 5–15 mm × 1.5–3 cm, as long as broad; roots few per node; *cataphylls* deciduous. LEAVES erect to erect-spreading; *petioles* 16.5–49 cm, yellow-green, semiglossy, longitudinally striate near base, terete to subterete above sheath, weakly to narrowly sulcate above sheath, petiole and sheath drying dark olive-brown; sheath 10.5–23 cm, 0.3–0.6(0.8) times as long as petiole, densely dark green-speckled; margin of sheath drying papery and pale, one margin acute and one margin rounded at apex; *blades* elliptic, coriaceous, rarely subcoriaceous, broadly rounded and abruptly acuminate at apex, obtuse at base, 23.5–35 × 8.3–17 cm, 1.7–3.1 times longer than wide, 0.6–1.6(1.9) times longer than petiole, broadest at middle, upper surface glossy to semiglossy, dark green to yellow-green, drying conspicuously glossy, dark olive-green, many minute white raphides easily visible with a 10× lens, lower surface semiglossy to matte, paler to much paler than above, drying glossy and slightly paler than above; *midrib* narrowly sunken and marginally discolorous above, convex and paler below; *primary lateral veins* departing midrib at 30°–50° angles, weakly visible to obscure above, obscure below, drying raised above, barely raised below. INFLORESCENCES 1 per axil, erect; *peduncle* 21–34 cm × 2–3 mm (dry), cernuous; *spathe* green, promptly deciduous; *spadix* sessile, cylindrical, 5.5–6.5 cm × 6–7 mm (dry), yellow. Flowers hexagonal to irregularly square; stigma round, 0.3–0.5 mm diam.; stamens with filaments to 1 mm long; thecae oblong. INFRUCTESCENCE unknown.

Distribution and habitat. The species is known to occur in Colombia on the western slopes of the Cordillera Occidental in the Departments of Chocó and Valle and the eastern slopes of the Cordillera Central in the Department of Antioquia. It occurs in Premontane wet forest transition to Tropical (P-wf/T) and Tropical rainforest transition to Premontane (T-rf/P) life zones (Holdridge et al., 1971), from 30 to 1440 m elevations. This new species has been collected from primary forest, disturbed forest, and along forested stream banks.

Phenology. *Stenospermation ellipticum* has been collected in flower from March to August in the Bajo Calima region.

Stenospermation ellipticum is distinguished by its usually epiphytic habit; short internodes; conspicuously glossy elliptic blades (hence the epithet) with a broadly rounded base, abruptly acuminate apex, and dark green-speckled petioles, usually sheathed about halfway; and sessile yellow spadices on long peduncles to 34 cm.

Stenospermation ellipticum may be confused with *S. maximum* Engler, because they are both large-bladed species with prominent venation on the upper blade surface. The latter species differs in having blades with a tapering acuminate apex, drying dull olive-green, and a stipitate spadix with a spathe that persists well into anthesis.

Another species that might be confused with *Stenospermation ellipticum* from Colombia is *S. arborescens* Madison, a plant collected from high Ecuadorian cloud forests. The latter species differs by occurring as a terrestrial arborescent plant, to 3 m tall, with large (50–60 cm long) blades and white spadices that are stipitate to 1–1.5 cm.

Another species similar to Colombian *Stenospermation ellipticum* is *S. crassifolium* Engler, which occurs as an epiphyte in the Peruvian Amazon basin. *Stenospermation crassifolium* differs from *S. ellipticum* in having blades that are larger (45 cm vs. 8.3–17 cm) and more acute at the apex, and a spadix that is stipitate to 1 cm.

IUCN Red List category. Conservation status for *Stenospermation ellipticum* must be considered as LC (Least Concern) according to IUCN Red List criteria (IUCN, 2001), because it is known from many collections and has been found in Antioquia, Chocó, and Valle Departments.

Paratypes. COLOMBIA. **Antioquia:** El Castrillón, San Luis, *Loaiza et al. 153* (HUA), *169* (HUA); San Luis, Medellín–Bogotá rd., Río Tebaida, Km 100–125, *Callejas et al. 3421* (MO); San Luis, San Luis–San Carlos rd., Km 12, *Callejas et al. 4310* (MO). **Chocó:** Bolívar–Quibdó, Km 134.5, *Croat 55909* (B, K, MO, NY); San José del Palmar–Novita rd., ca. 3 km W of San José del Palmar, *Croat 56648* (COL, MO). **Valle:** Buenaventura–Málaga rd., Km 33.3, *Croat 61359* (CUVC, MO), Km 44, *Croat & Watt 70203* (MO), Km 50.5, *Croat & Bay 75604* (CUVC, MO), Km 52.4, *Croat & Bay 75725* (CUVC, K, MO); 1 km W of Carretera Gasolina, 6 km S of Buenaventura–Málaga rd. on Carretera Gasolina, *Croat 69402* (CUVC, MO); Carretera Hanz, *Croat 71062* (MO); Quebrada de La Brea, *Schultes & Villarreal 7380* (US); old Cali–Buenaventura rd., 29 km beyond jct. with new hwy., *Croat 38597* (MO); Bahia Málaga, vic. Base Naval Málaga, along rd. to Buenaventura, ca. 1 km from base, ca. Km 104, *Croat & Gaskin 80474* (CUVC, MO).

2. **Stenospermation escobariae** Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 51.3, deep gorge, ca. 4°09′N, 77°11′W, less than 100 m, 27 Feb. 1990, *T. B. Croat 71000* (holotype, MO-3784468).

Planta terrestris, interdum hemiepiphytica; internodia suberosa, 1–3 cm longa, 5–15 mm diam., pallide rubrobrunnea; cataphylla 13.5–18 cm longa, decidua; petiolus 13.5–23 cm longus, rigidus, vaginatus usque ad medium, marginibus vaginae scariosis; lamina elliptica usque oblanceolata, longe acuminata apiculataque, 16–28(35.5) cm longa, 3–7.5(9.5) cm lata; inflorescentia 1; pedunculus 7–22 cm longus, cernuus; spatha 14–22 cm longa, alboviridis vel alba; spadix usque 8 mm stipitatus, flavovirens vel flavus; stigma oblongum vel lineare, 0.8–1 mm longum; infructescentia veneta.

Usually terrestrial, sometimes hemiepiphytic; stem erect or appressed-climbing; *internodes* conspicuously transversely fissured, corky, gray, sometimes pale reddish brown, 1–3 × 0.5–1.50 cm, slightly longer than broad, drying gray, corky; roots 1 to 2 or none per node at upper nodes, drying gray; *cataphylls* 13.5–18 cm, long-tapered at apex, promptly deciduous. LEAVES erect; *petioles* stiff, 13.5–23 cm, dark green; sheath 9–17.5 cm, 0.4–0.8 times as long as petiole, dark green with pale brown scarious margins, gradually tapered at apex, drying dark brown with longitudinal wrinkles and pale scarious margins; *blades* elliptic to oblanceolate, subcoriaceous, long-acuminate at apex (acumen downturned and apiculate), attenuate to cuneate at base, 16–28(35.5) × 3–7.5(9.5) cm, (3.3)3.8–5.3 times longer than wide, 0.9–1.8 times longer than petiole, broadest at middle or more often beyond middle, upper surface glossy to semiglossy, dark green, drying dull, dark olive-brown, lower surface semiglossy, paler, drying glossy, medium brown; *midrib* narrowly sunken, concolorous above, narrow-raised and paler than blade below, drying concolorous with blade on both sides or sometimes paler below; *primary lateral veins* moderately obscure, but slightly puckering the blade, drying obscure or slightly raised below, departing midrib at 40°–50° angles; minor veins obscure. INFLORESCENCE 1 per axil, arching; *peduncle* 7–22 cm, cernuous, not fully erect at anthesis, equal to or longer than petiole; *spathe* 14–22 cm, long-tapered, light green becoming white, promptly deciduous at anthesis; *spadix* stipitate to 8 mm, cylindrical, 10+ cm long (all specimens broken off at some point along their length), 6–8 mm diam. (dry), yellowish green, becoming yellow at anthesis. Flowers hexagonal, stylar surface papillose; stigma oblong or linear, drying 0.8–1 mm, brown; stamens with filaments 1.2–1.4 mm; thecae oblong. INFRUCTESCENCE to 15 cm long, drying 1 cm wide; *berries* bluish green, matte; seeds 1.5–2 mm.

Distribution and habitat. The species ranges along the Pacific Andean slopes of Colombia in the Departments of Antioquia, Chocó, Nariño, and Valle to the Carchi Province of Ecuador in Tropical rainforest (T-rf) and Tropical rainforest transition to Premontane (T-rf/P), from near sea level to 1850 m. It has been collected from primary rainforest, regrowth forest, and forested stream banks.

Phenology. *Stenospermation escobariae* has been collected in flower in April, November, and December, and in fruit in February and March.

Stenospermation escobariae is easily recognized by the gray, corky stem and the stiff, dark green petioles sheathed halfway or more but not entirely, with the sheath having pale, scarious, gradually tapered margins. In addition, the blades appear to be puckered by the moderately obscure primary lateral veins. Also distinctive is the matte and bluish green infructescence.

One paratype collection (*Croat 56092*) differs slightly in having blades that are matte on the upper surface. Two other paratype collections (*Callejas 7179* and *Franco et al. 5017*) differ in having stems only slightly scurfy rather than corky.

Etymology. The species is named in honor of the late Linda Katherine Albert de Escobar (1940–1993), an American botanist, who made one of the first collections of the species from the Bajo Calima region.

IUCN Red List category. Conservation status for *Stenospermation escobariae* must be considered as LC (Least Concern) according to IUCN criteria (IUCN, 2001), because it is known from many collections and has been found in four Departments in Colombia and in Ecuador.

Paratypes. COLOMBIA. **Antioquia:** Guatapé, Santa Rita rd., Vía Guatapé–La Almanera, *Callejas 7179* (MO). **Chocó:** Serranía de Baudó, Las Animas–Pato rd., on Río Pato, about 5 km SW of Pato, *Croat 56092* (COL, HUA, MO). **Nariño:** Barbacoas, Altaquer, Res. Nat. Río Ñambí, *Franco et al. 5017* (MO). **Valle:** Buenaventura–Málaga rd., Km 12.5, *Croat 70151* (MO), Km 35.2, *Croat & Bay 75757* (CUVC, MO); village of Bajo Calima, *de Escobar et al. 4007* (HUA); Pacific Coast, Río Cajambre, *Cuatrecasas 17227* (US). ECUADOR. **Carchi:** Maldonado, Tobar Donoso, Awá Ethnic Res., *Aulestia et al. 655* (MO).

3. **Stenospermation flavum** Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 50.7, 50–100 m, 12 July 1993, *T. B. Croat & D. C. Bay 75691* (holotype, MO-04575801).

Planta epiphytica; internodia 1–3 cm longa, 1.5–1.7 cm diam., rubrobrunnea usque purpurea, basibus petiolorum obtecta; cataphylla decidua; petiolus 16–31 cm longus, teres, anguste sulcatus, 1/2 usque 2/3 partem longitudinis vaginatus, vagina introrsum crispa; lamina longe elliptica, 31–35 cm longa, 5.5–6.8 cm lata; inflorescentia 1; pedunculus 30–31.5 cm longus, cernuus; spatha cremeoflava; spadix usque 6 mm stipitatus, 9.5–12 cm longus, cremeoflavus; stigma oblongum, 0.3–0.5(0.7) mm longum.

Epiphytic; stem appressed-climbing; *internodes* short, 1–3 × 1.5–1.7 cm, reddish brown to purple, obscured by petiole bases, drying dark brown; *cataphylls* promptly deciduous. LEAVES spreading; *petioles* 16–31 cm, terete, narrowly sulcate; sheath incurled, 12–16.5 cm, 0.5–0.7 times as long as petiole, ± equal at apex; *blades* oblong-elliptic, subcoriaceous, acuminate at apex (acumen down-turned), attenuate to cuneate to slightly rounded at base, 31–35 × 5.5–6.8 cm, 4.8–5.8 times longer than wide, 1–1.8 times longer than petiole, broadest at middle, upper surface semiglossy, dark green, drying dull, olive-green to olive-brown, lower surface glossy, moderately paler or yellowish green, drying semi-glossy and paler than above; *midrib* narrowly sunken above, convex and paler below; *primary lateral veins* numerous, departing midrib at 20°–25° angles, obscure both sides, drying raised above, barely raised below. INFLORESCENCE 1 per axil, erect; *peduncle* drying 30–31.5 cm × 2–3 mm, cernuous, medium green, apex of peduncle darker and somewhat swollen, about 1–2 cm, drying dark olive-green, becoming stramineous in age; *spathe* coriaceous, to 18.5 cm, glossy, creamy yellow, long-tapered; *spadix* stipitate to 6 mm, cylindrical, 9.5–12 cm × 6–9 mm (dry), creamy yellow. Flowers hexagonal; stigma oblong, 0.3–0.5(0.7) mm; stamens on filaments 1.7–2 mm; thecae oblong. INFRUCTESCENCE unknown.

Distribution and habitat. The species is known only from the Pacific Andean slopes of Colombia, in the Bajo Calima region, an area of Tropical rainforest transition to Premontane (T-rf/P), from 50 to 150 m. It has been collected in areas of older regrowth forest.

Phenology. *Stenospermation flavum* has been collected in flower only in July in the Bajo Calima region.

Stenospermation flavum is characterized by the oblong-elliptic blades with lower surfaces that are often yellowish green, drying olive-green to olive-brown, and petioles that are sheathed halfway or more with the sheath incurled. In addition, the long-tapered inflorescences remain cernuous, and both spathes and spadices are a distinctive creamy yellow. The specific epithet is derived from the color of the lower blade surface and the spadix ("flavus" meaning yellow).

Stenospermation flavum might be confused with *S. monsalvae* Croat & D. C. Bay; however, the latter species differs in drying a much darker and redder brown and having blades that are shorter (mostly 12.5–23.5(28.3) cm for *S. monsalvae* vs. 31–35 cm for *S. flavum*), with petiole sheaths that have scarious margins unequal at the apex. In addition, *S. monsalvae* has a shorter spathe (less than 14 cm vs. to 18.5 cm for *S. flavum*) that is more blunt at the apex and is green (as opposed to yellow in *S. flavum*).

Another species with which *Stenospermation flavum* might be confused is *S. robustum* Engler. However, the latter species differs in having a blade that is broader with a lower length:width ratio (4.8–10.5 cm wide and 2.9–4.3 times longer than wide for *S. robustum* vs. 5.5–6.8 cm wide and 4.8–5.8 times longer than wide for *S. flavum*), more rounded at base, and usually drying reddish brown. It also differs in having a spathe and spadix that are both white.

IUCN Red List category. Conservation status for *Stenospermation flavum* must be considered as DD (Data Deficient) according to IUCN criteria (IUCN, 2001), because the species is known from only two collections.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 50.5, *Croat & Watt 70340* (MO).

4. Stenospermation glaucophyllum Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 12.5, 100–150 m, 4 Feb. 1990, *T. B. Croat 70147* (holotype, MO-3786855; isotypes, CUVC, US).

Planta plerumque terrestris, interdum hemiepiphytica; internodia 1–3 cm longa, 1–1.3 cm diam.; cataphylla decidua; petiolus 6.3–23 cm longus, 3/5 usque 9/10 partem longitudinis vaginatus; lamina ovata ellipticave, 10–29 cm longa, 4.1–11 cm lata, infra albida, glauca; inflorescentia 1; pedunculus 21–31 cm longus, cernuus; spatha usque 12.5 cm longa, alba; spadix stipiti 6–11 mm longo insidens, 7.5–8.5 cm longus, flavus; stigma ovatum vel lineare, 0.5–1.5 mm latum; infructescentia usque 17.5 cm longa; baccae virides.

Usually terrestrial, sometimes hemiepiphytic; stem upright or appressed-climbing; *internodes* short, 1–3 × 1–1.3 cm, longer than broad, semiglossy, medium green to olive-green, drying light brown, longitudinally wrinkled; roots mostly at base of plant or 1 to 2 per node; *cataphylls* to 9 cm, rounded at apex, light green, deciduous. LEAVES spreading; *petioles* 6.3–23 cm, sheath 5.8–14 cm, 0.6–0.9 times as long as petiole, light green with wide (to 4 mm) scarious margin, one side acute and the other rounded at apex; geniculum sulcate; *blades* ovate to elliptic, subcoriaceous, short-acuminate at apex (acumen down-turned), obtuse at base, 10–29 × 4.1–11 cm, 2.5–3.2 times longer than wide, 1.3–2 times longer than petiole, broadest at middle, upper surface semiglossy, dark green, drying semiglossy, olive-green, lower surface matte, glaucous, white to pale green, drying dull, pale willow-green; *midrib* narrowly sunken, marginally discolorous above, convex, paler than above, sometimes yellow below, drying concolorous above and below; *primary lateral veins* obscure, departing midrib at 40°–50° angles, drying slightly raised above and below. INFLORESCENCES erect;

peduncle 21–31 cm × 3–5 mm (dry), longer than petiole, cernuous, remaining so at anthesis, medium green, drying olive-green; *spathe* to 12.5 cm, white, long-tapered; *spadix* stipitate 6–11 mm, cylindrical, 7.5–8.5 cm × 7–9 mm (dry), yellow. Flowers hexagonal; stylar surface papillose; stigma ovate-elliptic to linear, 0.5–1.5 mm diam. (dry), light brown; stamens with filaments to 3 mm; thecae oblong. INFRUCTESCENCE to 17.5 cm; *berries* ovoid, medium green; seeds cylindrical, pearly white.

Distribution and habitat. The species is known only from the Bajo Calima region of Colombia, an area of Tropical rainforest transition to Premontane (T-rf/P), from 50–150 m. It has been collected in areas of regrowth forest.

Phenology. *Stenospermation glaucophyllum* has been collected in flower in February and July, and in fruit in February.

Stenospermation glaucophyllum is characterized by the blades, which are matte, white to pale green, and glaucous below (hence the name "glaucus," meaning glaucous and "phyllum," meaning leaf); petioles sheathed more than midway with the sheath having a wide scarious margin; short (less than 3 cm) internodes; and the inflorescence that remains cernuous. This species is often afflicted with a pathogen that causes minute, pale yellow spots on every part of the plant except the stem. A similar pathogen is found on *Anthurium fragrans* Croat & D. C. Bay, a species that also exhibits pale yellow spots.

This species might be confused with *Stenospermation ellipticum* because they have similarly shaped blades that are dark green above, also paler and matte below. However, *S. ellipticum* differs in having larger blades (23.5–43 cm long) that are merely pale below not glaucous, drying dark reddish brown, petioles that are speckled, and a sessile spadix.

IUCN Red List category. Conservation status for *Stenospermation glaucophyllum* must be considered as NT (Near Threatened) according to IUCN criteria (IUCN, 2001). Although locally common in the area of the type locality, it is not yet known from other sites in Colombia. It is possible that the species is more widespread than is currently known because much of the Pacific slope is still poorly known.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 11, *Kennedy & Andrews 1321* (SEL), *Croat 62783* (CUVC, MO), *69306* (CUVC, MO, VALLE); Bahia Málaga near Base Naval Málaga, along rd. to Buenaventura, ca. 1 km from base, ca. Km 104, *Croat & Gaskin 80475* (CUVC, MO); vic. of Bahia Málaga, near Base Naval Málaga, along trail along the edge of the bay W of base headquarters, *Croat & Gaskin 80596* (CUVC, MO).

5. Stenospermation monsalvae Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 50.7, less than 100 m, 12 July 1993, *T. B. Croat & D. C. Bay 75690* (holotype, MO-04575803; isotypes, COL, CUVC, K, US).

Planta plerumque epiphytica, interdum terrestris; internodia 1–2 cm longa, 7–17 mm diam.; cataphylla decidua; petiolus (5.8)8–15.5 cm longus, teres, acute vel anguste sulcatus, usque ad 0.4–0.7(0.9) partem longitudinis vaginatus; lamina lanceolata vel elliptica, (9)12.5–23.5(28.3) cm longa, 3–5(7) cm lata; inflorescentia 1; pedunculus 20–36.5 cm longus, cernuus; spatha 6.3–13.8 cm longa, viridis; spadix usque 5–12 mm stipitatus, 3.7–9.5(13.5) cm longus, albus, sub anthesi flavescens; stigma ovatum, 0.5–0.7 mm longum; infructescentia 5–9 cm longa; baccae aurantiacae.

Usually epiphytic, occasionally terrestrial; stem appressed-climbing, or scandent; *internodes* short, 1–2 cm × 7–17 mm, semiglossy, yellow-green becoming brown, drying dark brown; *cataphylls* 3.5–11.5 cm, apiculate at apex, drying dark brown, deciduous. LEAVES erect to spreading; *petioles* (5.8)8–15.5 cm × 1–3 mm (dry), terete, sharply to narrowly sulcate; sheath 4–10.8 cm, 0.4–0.7(0.9) times as long as petiole, one side acute and the other rounded at apex, medium green with scarious margin, drying dark brown with pale margin; *blades* lanceolate to elliptic, subcoriaceous, abruptly acuminate at apex (acumen downturned), usually attenuate, sometimes cuneate, or rarely rounded at base, (9)12.5–23.5(28.3) × 3–5(7) cm, 3.2–5.9(6.7) times longer than wide, 1.2–1.8(2.3) times longer than petiole, broadest near middle, upper surface semiglossy to glossy, dark green, weakly bicolorous, drying dull, reddish brown to olive-brown, lower surface drying semiglossy and paler than above; *midrib* narrowly sunken, sometimes weakly discolored along margin above, convex and paler below, drying slightly darker than surface below; *primary lateral veins* numerous, obscure, departing midrib at 25°–30° angles, drying barely raised below or obscure on both sides. INFLORESCENCE 1 per axil, spreading to pendulous; *peduncle* 20–36.5 cm × 1–3 mm (dry), cernuous, drying medium to dark or reddish brown; *spathe* 6.3–13.8 cm, green, abruptly acuminate to long-tapered; *spadix* stipitate 5–12 mm, cylindrical, 3.7–9.5(13.5) cm × 6–8 mm, white becoming yellow at anthesis. Flowers hexagonal, surface of ovary with numerous short white raphides; stigma ovate, 0.5–0.7 mm diam.; stamens with filaments to 1.8 mm; thecae oblong. INFRUCTESCENCE 5–9 × 1–1.5 cm (dry); *berries* orange, surface of ovary drying pale white with numerous dark red punctations (under 10× magnification); seeds oblong to clavate, 2.1–2.3 mm.

Distribution and habitat. The species is known only from the Pacific Andean slopes of Colombia, in

the Departments of Chocó and Valle, in areas of Tropical rainforest (T-rf) and Tropical rainforest transition to Premontane (T-rf/P), from sea level to 465 m. It has been collected in areas of regrowth forest and primary forest.

Phenology. *Stenospermation monsalvae* has been collected in flower in January, February, May, July, August, November, and December and in fruit in May, August, September, and November in the Bajo Calima region.

Stenospermation monsalvae is characterized by the petioles, which are narrowly sulcate, sheathed one third to three fourths of the way, and blades that usually dry reddish brown, sometimes olive-brown, with obscure veins. Also distinctive are the pendent inflorescences on thin peduncles with green spathes, and long-stipitate yellow spadices that are orange in fruit.

Etymology. The species is named in honor of Miryam Monsalve (1955–), a Colombian botanist from Cali and a specialist on the Bajo Calima flora, who has made many collections of this species. Miryam was one of the first botanists to work in the Bajo Calima region after it was opened up for exploration by Cartón de Colombia.

IUCN Red List category. Conservation status for *Stenospermation monsalvae* must be considered as LC (Least Concern) according to IUCN criteria (IUCN, 2001), because it is known from many collections and has been found in both Chocó and Valle Departments.

Paratypes. COLOMBIA. **Chocó:** Corcovada region, upper Río San Juan, ridge along Yeracüí valley, *Killip 35261* (US); Bagado–Cértegui trail, *Juncosa 1520* (MO); Quibdó–Bolívar, Km 175–176, 117–118 km E of Quibdó, *Croat 57506* (MO). **Valle:** Buenaventura–Málaga, Km 11, *Gentry 35256* (MO), *62815* (CUVC), *Juncosa 2140* (CUVC), *Monsalve 189* (MO), *300* (MO), *548* (MO), *850* (MO), *894* (MO), *907* (MO), *2070* (CUVC), *Stein et al. 3245* (MO), *van der Werff & Monsalve 9693* (CUVC, MO); Km 22, Carr. Hanz, *Croat 69472* (CUVC, MO); Km 28, Carr. Nac., *Monsalve 3061* (CUVC, MO); Carr. Dindo, *Monsalve 1137* (MO), *1144* (MO); Km 33.3, *Croat 61290* (COL, MO); Km 39, San Isidro, *Devia 2793* (TULV), *Daly et al. 6039* (CUVC, NY); Km 42–43, *Croat & Watt 70308* (MO); Km 44, *Croat & Watt 70181* (MO); Km 50.5, *Croat & Watt 70339* (MO); Km 65–66, *Croat 71051A* (MO); rd. to Juanchaco Palmeras, *Gentry et al. 47836* (MO); Bahia Málaga, vic. Base Naval Málaga, along rd. to Buenaventura, ca. 1 km from base, ca. Km 104, *Croat & Gaskin 80471* (CUVC, MO); vic. of Bahia Málaga, Base Naval Málaga, Río Bongito, *Croat & Gaskin 80544* (CUVC, MO).

6. Stenospermation velutinum Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 44, less than 100 m, 5 Feb. 1990, *T. B. Croat & J. Watt 70232* (holotype, MO-3784020; isotypes, QCNE, VEN).

Planta epiphytica, raro terrestris; internodia 1–4 cm longa, 5–17 mm diam.; cataphylla decidua; petiolus 8–17 cm longus, circa 7/10 partem longitudinis vaginatus; lamina ovata usque anguste elliptica, 14–33 cm longa, 3.5–7.8 cm lata, supra velutina, infra hebatata; inflorescentia 1; pedunculus 6–11 cm longus, primo cernuus, juxta anthesim erectus; spatha 6–7 cm longa, viridis vel alba vel flavoviridis; spadix usque 6 mm stipitatus, 4–6 cm longus, flavalbus vel flavoviridis; stigma oblongum vel lineare, 1.2–1.3 mm longum.

Epiphytic, rarely terrestrial; stem appressed-climbing or scandent; *internodes* semiglossy, 1–4 cm × 5–17 mm, longer than broad, gray-green to dark green becoming light brown, drying gray; roots few per node; *cataphylls* deciduous. LEAVES erect; *petioles* 8–17 cm, oval in cross section; sheath 8–11.6 cm, 0.7 as long as or equal to petiole, tapered at apex, sometimes one side obtuse at apex; *blades* ovate to narrow-elliptic, subcoriaceous, acuminate at apex, attenuate at base, 14–33 × 3.5–7.8 cm, 3.8–4.5 times longer than wide, 1.9–2.8 times longer than petiole, broadest at middle or slightly beyond middle, upper surface velvety, dark green, drying dull, dark olive-green, lower surface matte, paler than above, drying dull, slightly paler than above; *midrib* narrowly sunken and marginally discolorous above, paler and obtusely raised below; *primary lateral veins* obscure, departing midrib at 20°–30° angles; minor veins obscure. INFLORESCENCE 1 per axil, erect; *peduncle* 6–11 cm × 2–3 mm (dry), cernuous becoming erect near anthesis; *spathe* 6–7 cm, green becoming white to yellowish green, long-tapered at apex, drying black; *spadix* stipitate to 6 mm, cylindrical, bluntly tapered at apex, 4–6 cm × 8–10 mm (dry), yellowish white to yellowish green. Flowers hexagonal; stigma oblong to linear, 1.2–1.3 mm diam. (dry); stamens with filaments 2.4–2.6 mm; thecae ovate to oblong. INFRUCTESCENCES unknown.

Distribution and habitat. The species is known only from the Bajo Calima region in Tropical rainforest transition to Premontane (T-rf/P), from 50–150 m. It has been collected in areas of older regrowth forest.

Phenology. *Stenospermation velutinum* has been collected in flower in February, March, and September.

Stenospermation velutinum is characterized by blades that are dark green and velvety (hence the epithet from the Latin "velutinus," meaning velvety) above and matte below, petioles that are often completely sheathed, sometimes sheathed to three fourths their length, as well as by inflorescences with white spathes that dry black with yellowish spadices at anthesis.

IUCN Red List category. Conservation status for *Stenospermation velutinum* must be considered as LC

(Least Concern) according to IUCN criteria (IUCN, 2001), because it is known from many collections and has been found in both Chocó and Valle Departments.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 11, *Monsalve 409* (MO), *935A* (MO), Km 11.5, *Croat & Gaskin 79777* (CUVC, MO); 1 km W of Carr. Gasolina & 6 km S of Buenaventura–Málaga rd., *Croat 69432* (CUVC, MO); Buenaventura–Málaga rd., Km 52.4, *Croat & Bay 75720* (CUVC, MO).

7. Xanthosoma guttatum Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 51.7, 16 July 1993, *T. B. Croat & D. C. Bay 75799* (holotype, MO-04576770; isotypes, CUVC, K, US).

Planta terrestris; caulis ad apicem circa 20 cm diam.; petiolus 44–162 cm longus, teres, flavoviridis, purpureoguttatus, usque ad dimidium vaginatus marginibus vaginae purpureis et undulatis; lamina ovata, base sagittata, 40–161 cm longa, 24–100 cm lata, supra glandulosopunctata, costa et nervis lateralibus principalibus infra dense purpureoguttatis; in paginis utrisque nervis lateralibus 3–9; nervis collectivis 2–3; inflorescentiae 5; pedunculus 16–25 cm longus, purpureoguttatus; spatha 13–17 cm longa; lamina spathae extus rubroviolacea, intus albida; tubus spathae in superfaciebus ambabus atrovinaceus; spadix 12–15 cm longus, parte pistillata 1.8 cm longa, aurantiaca.

Terrestrial; trunk not visible; base of petioles at top of stem ca. 20 cm wide. LEAVES erect-spreading; *petioles* 44–162 cm, unsheathed portion terete, yellow-green, densely purple-speckled, sheathed halfway; sheath with undulate purple margins; *blades* ovate, acuminate at apex, sagittate at base, coriaceous, 40–161 × 24–100 cm, 1.4–1.6 times longer than wide, 0.9–1.4 times longer than petiole, upper surface semiglossy, dark green, drying glossy, dark brown with numerous, minute, dark, glandular punctations (at magnification of about 40×), lower surface weakly glossy, yellow-green or paler than above, drying glossy, slightly paler than above; anterior lobe 1.9–2 times longer than posterior lobes; posterior lobes acutely rounded at apex; major veins broadly rounded, pale yellow-green above, thicker than broad, paler than surface, densely purple-speckled below; *primary lateral veins* 3 to 9 per side, departing midrib at 60°–70° angles; collective veins 2 to 3, close to margin; minor veins weakly raised, darker than surface. INFLORESCENCES 5 per axil; *peduncle* erect, 16–25 cm, flesh-colored, densely violet-purple-speckled, glaucous; *spathe* 13–17 cm; spathe tube dark burgundy both surfaces, glaucous outside, glossy within; spathe blade reddish violet outside, white inside; *spadix* 12–15 cm; pistillate portion 1.8 cm × 19 mm at base (dry), 11 mm diam. at apex (dry), orange with red stigmas; staminate portion 11.8 cm; fertile staminate portion cylindrical, 10 cm × 8 mm (dry), pale pink; sterile staminate portion 1.8 cm, tan at base (lower 8 × 13 mm), white at apex (upper 1 cm × 6–7 mm). INFRUCTESCENCE unknown.

Distribution and habitat. The species is known only from the type collection made in the Bajo Calima region, on the Pacific Andean slopes of Colombia, Department of Valle, in Tropical rainforest transition to Premontane (T-rf/P), at about 30–50 m. It was collected on a narrow strip of alluvium along a stream.

Phenology. *Xanthosoma guttatum* was collected in flower in July in the Bajo Calima region.

Xanthosoma guttatum is characterized by semiglossy sagittate blades with minute dark glandular punctations on the upper surface (visible at 40× magnification) and densely purple-speckled veins on the lower surface, and densely purple-speckled petioles. Also distinctive are the glaucous inflorescences, which have spathes that are reddish violet on the outside. The specific epithet derives from the Latin "guttatum," meaning speckled.

Xanthosoma guttatum most closely resembles *X. undipes* K. Koch from Costa Rica and Panama, with which it shares convex major veins on the upper blade surface and the spathe tube dark purplish within, as well as the orange pistillate portion of the spadix. *Xanthosoma undipes* differs in being a montane species, usually occurring at above 1000 m elevation, and in lacking the dark punctations on the vegetative parts as in *X. guttatum*.

Owing to its large size, lack of a conspicuous trunk, and its large sagittate blades, *Xanthosoma guttatum* also resembles *X. robustum* Schott from Central America, but that species differs in having its major veins sunken on the upper surface, not convex as is the case with *X. guttatum*. In addition, *X. robustum* also lacks the dark punctations on its vegetative parts and has the inner surface of the spathe tube green, not dark burgundy on both inner and outer surfaces, as is the case with *X. guttatum*.

IUCN Red List category. Conservation status for *Xanthosoma guttatum* must be considered as DD (Data Deficient) according to IUCN criteria (IUCN, 2001), because it is known from only the type specimen.

8. Xanthosoma hebetatum Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 50.7, 12 July 1993, *T. B. Croat & D. C. Bay 75659* (holotype, MO-04572434; isotypes, COL, CUVC, K, US).

Planta terrestris; caulis usque 1 m altus; internodia 1.5–5 cm longa, usque 6 cm diam.; cataphylla decidua praeter partem basalem; petiolus 56–77 cm longus, adaxialiter

obtuse subcomplanatus, ca. 1/3 partem longitudinis vaginatus; lamina ovata, basi subhastata, 45–62.5 cm longa, 26–33.5 cm lata, supra subnitida, infra impolita, in paginis utrisque nervis lateralibus principalibus 5; infructescentia 1, erecta; pedunculus usque 8 cm longus; tubus spathae extus pallide viridis; baccae viridalbae.

Terrestrial; stem to 1 m tall, sap milky, becoming amber in age; *internodes* 1.5–5 × 6 cm, fissured both horizontally and longitudinally, dark brown, drying dark brown; *cataphylls* deciduous but persisting at bases, fibrous. LEAVES erect-spreading; *petioles* 56–77 cm, terete, obtusely flattened adaxially, somewhat spongy, medium green, faintly pale-speckled, drying dark brown, sheathed ca. 1/3 of their length; *blades* ovate, acuminate at apex, subhastate at base, thin, 45–62.5 × 26–33.5 cm, 1.7–1.9 times longer than wide, 0.8–0.9 times longer than petiole, subcoriaceous to thinly coriaceous, moderately bicolorous, upper surface semiglossy, dark green, drying semiglossy, dark olive-green, lower surface matte to weakly glossy below, paler than above, drying glossy, light olive-green; anterior lobe 1.6–1.8 times longer than posterior lobes; posterior lobes rounded to acute at apex, directed slightly outward; major veins obtusely sunken, concolorous in life and dry above, round-raised to C-shaped, paler than surface, drying slightly raised, darker than surface below; basal ribs naked to 3 cm; *primary lateral veins* usually 5 per side, departing midrib at 50°–60° angles; collective veins 2, one submarginal, one ca. 5 mm from margin; minor veins prominulous, darker than surface, the larger ones raised below. INFLORESCENCES with *peduncle* 13–14.5 cm, somewhat compressed, pale green, drying 5–7 mm wide; *spathe* 22–22.5 cm, the blade creamy white, ca. 4 cm wide at anthesis, the tube uniformly light green outside, pale greenish inside; staminate spadix and pollen cream-colored; pistillate portion yellowish, 5.8 cm, 0.7–1.3 mm diam.; staminate spadix 13.5–14 cm, the sterile portion 5 cm, ca. 1 cm diam., with thickened flowers at the base (these 3–4 × 1.2–1.6 mm), constricted to 5 mm diam. toward the apex; fertile portion 8.5–9 cm, drying 9–10 mm wide, bluntly pointed at the apex. INFRUCTESCENCES 1 per axil, erect, to 6 × 3.5 cm (dry); *peduncle* to 8 cm, pale green; spathe tube light green outside; *berries* greenish white; seeds cream-white, 0.7–1.1 × 0.6–1 mm, pyramidal with 9 acute longitudinal ridges or lemon-shaped with 12 acute longitudinal ridges.

Distribution and habitat. The species is endemic to Colombia, occurring in the Bajo Calima region, on the Pacific Andean slopes of Colombia, Departments of Valle and Chocó, in Tropical rainforest transition to Premontane (T-rf/P), at about 30–50 m. It was collected in older regrowth forest.

Phenology. *Xanthosoma hebetatum* was collected in fruit in July in the Bajo Calima region.

Xanthosoma hebetatum is characterized by its ovate blades, which are subhastate at the base and matte (appearing almost glaucous, hence the epithet from the Latin "hebetatus," meaning matte) on the lower surface. It differs from *X. guttatum* in being a smaller plant with ovate-subhastate leaves that are matte with sunken major veins on the upper surface.

IUCN Red List category. Conservation status for *Xanthosoma hebetatum* must be considered as LC (Least Concern) according to IUCN criteria (IUCN, 2001), because it is known from three collections in both Chocó and Valle Departments and because plants of this size are rarely collected.

Paratypes. COLOMBIA. **Choco:** ca. 10–15 km S of Quibdó on rd. to Istmina (Panamerican Hwy.), 8–10 km E on rd. to petroleum exploration camp, 90 m, 9 July 1986, *Grayum, Hammel, Kress & G. Brown* 7655 (MO). **Valle:** Buenaventura–Málaga rd., Km 11.5, *Croat & Gaskin 79778* (CUVC, MO); Municipio Buenaventura, Corregimiento Chancos, Campamento CVC, via Dos Quebrados, *W. Devia A & F. Prado 2432* (TULV, US).

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